

-#4

|   |                      |                |
|---|----------------------|----------------|
| <b>CERTIFICATION REGARDING SEQUENCE LISTING</b> | Application Number   | 09/812,485     |
|   | Confirmation Number  | 1637           |
|   | Filing Date          | March 19, 2001 |
|   | First Named Inventor | Kumagai        |
|   | Examiner             | Unassigned     |
|   | Group Art            | Unassigned     |
|   | Attorney Docket No.  | BEAR006CIP     |

ADDRESS TO: Assistant Commissioner for Patents  
Washington, D.C. 20231


Sir:

I hereby certify that the enclosed Sequence Listing is being submitted in paper copy and on a computer-readable diskette, and that the content of the paper and computer readable copies are the same.

I hereby certify that the enclosed submission includes no new matter.

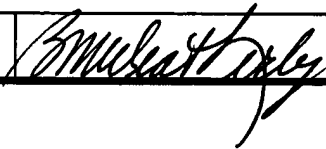
The Commissioner is authorized to charge any fees which may be required, or credit any overpayment to Deposit Account 50-0815. If additional fees are required, including extensions of time, please consider this a petition therefore.

**SIGNATURE OF APPLICANT, ATTORNEY OR AGENT REQUIRED**

|                         |   |                  |                                 |     |       |
|-------------------------|---|------------------|---------------------------------|-----|-------|
| Name (Print/Type)       | Paula A. Borden   | Registration No. | 42,344                          |     |       |
| Signature               |  | Date             | July 31, 2001                   |     |       |
| Firm Name               | Bozicevic, Field & Francis LLP  | Address          | 200 Middlefield Road, Suite 200 |     |       |
| City                    | Menlo Park  | State            | California                      | zip | 94025 |
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**CERTIFICATE OF MAILING OR TRANSMISSION**

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, Washington, DC 20231.

|                   |                      |           |  |      |               |
|-------------------|----------------------|-----------|--|------|---------------|
| Name (Print/Type) | Barbara M. Weatherly | Signature |  | Date | July 31, 2001 |
|-------------------|----------------------|-----------|--|------|---------------|



## SEQUENCE LISTING

<110> Kumagai, Yoshinori  
Blacher, Russel  
Yoneda, Toshiyuki

<120> Integrin Binding Motif Containing  
Peptides and Methods of Treating Skeletal Diseases

<130> BEAR-006CIP

<140> 09/812,485

<141> 2001-03-19

<150> 09/641,034

<151> 2000-08-16

<160> 50

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 97

<212> PRT

<213> Artificial Sequence

<220>

<223> peptidic compound

<400> 1

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| Asp | Ser | Gln | Ala | Gln | Lys | Ser | Pro | Val | Lys | Ser | Lys | Ser | Thr | His | Arg |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Ile | Gln | His | Asn | Ile | Asp | Tyr | Leu | Lys | His | Leu | Ser | Lys | Val | Lys | Lys |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Ile | Pro | Ser | Asp | Phe | Glu | Gly | Ser | Gly | Tyr | Thr | Asp | Leu | Gln | Glu | Arg |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Gly | Asp | Asn | Asp | Ile | Ser | Pro | Phe | Ser | Gly | Asp | Gly | Gln | Pro | Phe | Lys |
|     | 50  |     |     |     |     | 55  |     |     |     | 60  |     |     |     |     |     |
| Asp | Ile | Pro | Gly | Lys | Gly | Glu | Ala | Thr | Gly | Pro | Asp | Leu | Glu | Gly | Lys |
| 65  |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |     |
| Asp | Ile | Gln | Thr | Gly | Phe | Ala | Gly | Pro | Ser | Glu | Ala | Glu | Ser | Thr | His |
|     |     |     | 85  |     |     |     |     | 90  |     |     |     |     |     | 95  |     |

Leu

<210> 2

<211> 47

<212> PRT

<213> Artificial Sequence

<220>

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<400> 2  
 Ala Gln Lys Ser Pro Val Lys Ser Lys Ser Thr His Arg Ile Gln His  
 1 5 10 15  
 Asn Ile Asp Tyr Leu Lys His Leu Ser Lys Val Lys Lys Ile Pro Ser  
 20 25 30  
 Asp Phe Glu Gly Ser Gly Tyr Thr Asp Leu Gln Glu Arg Gly Asp  
 35 40 45

<210> 3  
 <211> 47  
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<220>  
 <223> peptidic compound

<400> 3  
 Arg Gly Asp Ala Gln Lys Ser Pro Val Lys Ser Lys Ser Thr His Arg  
 1 5 10 15  
 Ile Gln His Asn Ile Asp Tyr Leu Lys His Leu Ser Lys Val Lys Lys  
 20 25 30  
 Ile Pro Ser Asp Phe Glu Gly Ser Gly Tyr Thr Asp Leu Gln Glu  
 35 40 45

<210> 4  
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<220>  
 <223> peptidic compound

<400> 4  
 Asp Ser Gln Ala Gln Lys Ser Pro Val Lys Ser Lys Ser Thr His Arg  
 1 5 10 15  
 Ile Gln His Asn Ile Asp Tyr Leu Lys His Leu Ser Lys Val Lys Lys  
 20 25 30  
 Ile Pro Ser Asp Phe Glu Gly Ser Gly Tyr Thr Asp Arg Gly Asp  
 35 40 45

<210> 5  
 <211> 44  
 <212> PRT  
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<220>  
 <223> peptidic compound

<400> 5  
 Arg Gly Asp Ser Pro Val Lys Ser Lys Ser Thr His Arg Ile Gln His  
 1 5 10 15

Asn Ile Asp Tyr Leu Lys His Leu Ser Lys Val Lys Lys Ile Pro Ser  
 20 25 30  
 Asp Phe Glu Gly Ser Gly Tyr Thr Asp Leu Gln Glu  
 35 40

<210> 6  
 <211> 44  
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<220>  
 <223> peptidic compound

<400> 6  
 Asp Ser Gln Ala Gln Lys Ser Pro Val Lys Ser Lys Ser Thr His Arg  
 1 5 10 15  
 Ile Gln His Asn Ile Asp Tyr Leu Lys His Leu Ser Lys Val Lys Lys  
 20 25 30  
 Ile Pro Ser Asp Phe Glu Gly Ser Gly Arg Gly Asp  
 35 40

<210> 7  
 <211> 37  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> peptidic compound

<400> 7  
 Arg Gly Asp Thr His Arg Ile Gln His Asn Ile Asp Tyr Leu Lys His  
 1 5 10 15  
 Leu Ser Lys Val Lys Lys Ile Pro Ser Asp Phe Glu Gly Ser Gly Tyr  
 20 25 30  
 Thr Asp Leu Gln Glu  
 35

<210> 8  
 <211> 41  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> peptidic compound

<400> 8  
 Asp Ser Gln Ala Gln Lys Ser Pro Val Lys Ser Lys Ser Thr His Arg  
 1 5 10 15  
 Ile Gln His Asn Ile Asp Tyr Leu Lys His Leu Ser Lys Val Lys Lys  
 20 25 30  
 Ile Pro Ser Asp Phe Glu Arg Gly Asp  
 35 40

<210> 9  
 <211> 27  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <223> peptidic compound  
  
 <400> 9  
 Arg Gly Asp Leu Lys His Leu Ser Lys Val Lys Lys Ile Pro Ser Asp  
 1 5 10 15  
 Phe Glu Gly Ser Gly Tyr Thr Asp Leu Gln Glu  
 20 25

<210> 10  
 <211> 38  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> peptidic compound  
  
 <400> 10  
 Asp Ser Gln Ala Gln Lys Ser Pro Val Lys Ser Lys Ser Thr His Arg  
 1 5 10 15  
 Ile Gln His Asn Ile Asp Tyr Leu Lys His Leu Ser Lys Val Lys Lys  
 20 25 30  
 Ile Pro Ser Arg Gly Asp  
 35

<210> 11  
 <211> 24  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> peptidic compound  
  
 <400> 11  
 Arg Gly Asp Leu Ser Lys Val Lys Lys Ile Pro Ser Asp Phe Glu Gly  
 1 5 10 15  
 Ser Gly Tyr Thr Asp Leu Gln Glu  
 20

<210> 12  
 <211> 32  
 <212> PRT  
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<220>

<223> peptidic compound

<400> 12

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Ser | Gln | Ala | Gln | Lys | Ser | Pro | Val | Lys | Ser | Lys | Ser | Thr | His | Arg |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Ile | Gln | His | Asn | Ile | Asp | Tyr | Leu | Lys | His | Leu | Ser | Lys | Arg | Gly | Asp |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |

<210> 13

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> peptidic compound

<400> 13

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Gly | Asp | Val | Lys | Lys | Ile | Pro | Ser | Asp | Phe | Glu | Gly | Ser | Gly | Tyr |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Thr | Asp | Leu | Gln | Glu |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     | 20  |     |     |     |     |     |     |     |     |     |     |     |     |

<210> 14

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> peptidic compound

<400> 14

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Ser | Gln | Ala | Gln | Lys | Ser | Pro | Val | Lys | Ser | Lys | Ser | Thr | His | Arg |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Ile | Gln | His | Asn | Ile | Asp | Tyr | Leu | Lys | Arg | Gly | Asp |     |     |     |     |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     |     |     |     |

<210> 15

<211> 18

<212> PRT

<213> Artificial Sequence

<220>

<223> peptidic compound

<400> 15

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Gly | Asp | Ile | Pro | Ser | Asp | Phe | Glu | Gly | Ser | Gly | Tyr | Thr | Asp | Leu |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Gln | Glu |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

<210> 16

<211> 25  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> peptidic compound

<400> 16  
Asp Ser Gln Ala Gln Lys Ser Pro Val Lys Ser Lys Ser Thr His Arg  
1 5 10 15  
Ile Gln His Asn Ile Asp Arg Gly Asp  
20 25

<210> 17  
<211> 15  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> peptidic compound

<400> 17  
Arg Gly Asp Asp Phe Glu Gly Ser Gly Tyr Thr Asp Leu Gln Glu  
1 5 10 15

<210> 18  
<211> 19  
<212> PRT  
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<220>  
<223> peptidic compound

<400> 18  
Asp Ser Gln Ala Gln Lys Ser Pro Val Lys Ser Lys Ser Thr His Arg  
1 5 10 15  
Arg Gly Asp

<210> 19  
<211> 12  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> peptidic compound

<400> 19  
Arg Gly Asp Gly Ser Gly Tyr Thr Asp Leu Gln Glu  
1 5 10

<210> 20  
<211> 13  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> peptidic compound

<400> 20  
Asp Ser Gln Ala Gln Lys Ser Pro Val Lys Arg Gly Asp  
1 5 10

<210> 21  
<211> 10  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> peptidic compound

<400> 21  
Arg Gly Asp Gly Tyr Thr Asp Leu Gln Glu  
1 5 10

<210> 22  
<211> 10  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> peptidic compound

<400> 22  
Asp Ser Gln Ala Gln Lys Ser Arg Gly Asp  
1 5 10

<210> 23  
<211> 40  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> peptidic compound

<400> 23  
Arg Gly Asp Asn Asp Ile Ser Pro Phe Ser Gly Asp Gly Gln Pro Phe  
1 5 10 15  
Lys Asp Ile Pro Gly Lys Gly Glu Ala Thr Gly Pro Asp Leu Glu Gly  
20 25 30  
Lys Asp Ile Gln Thr Gly Phe Ala  
35 40



<210> 24  
<211> 40  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> peptidic compound

<400> 24  
Asn Asp Ile Arg Gly Asp Ser Pro Phe Ser Gly Asp Gly Gln Pro Phe  
1 5 10 15  
Lys Asp Ile Pro Gly Lys Gly Glu Ala Thr Gly Pro Asp Leu Glu Gly  
20 25 30  
Lys Asp Ile Gln Thr Gly Phe Ala  
35 40

<210> 25  
<211> 35  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> peptidic compound

<400> 25  
Asn Asp Ile Ser Pro Phe Arg Gly Asp Ser Gly Asp Gly Gln Pro Phe  
1 5 10 15  
Lys Asp Ile Pro Gly Lys Gly Glu Ala Thr Gly Pro Asp Leu Glu Gly  
20 25 30  
Lys Asp Ile  
35

<210> 26  
<211> 30  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> peptidic compound

<400> 26  
Asn Asp Ile Ser Pro Phe Ser Gly Asp Arg Gly Asp Gly Gln Pro Phe  
1 5 10 15  
Lys Asp Ile Pro Gly Lys Gly Glu Ala Thr Gly Pro Asp Leu  
20 25 30

<210> 27  
<211> 45  
<212> PRT  
<213> Artificial Sequence

<220>  
 <223> peptidic compound

<400> 27  
 Phe Ser Gly Asp Gly Gln Pro Phe Lys Asp Ile Pro Gly Lys Gly Glu  
 1 5 10 15  
 Ala Thr Gly Pro Asp Leu Glu Gly Lys Asp Ile Gln Thr Gly Phe Ala  
 20 25 30  
 Gly Pro Ser Glu Ala Glu Ser Arg Gly Asp Thr His Leu  
 35 40 45

<210> 28  
 <211> 35  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> peptidic compound

<400> 28  
 Ile Pro Gly Lys Gly Glu Ala Thr Gly Pro Asp Leu Glu Gly Lys Asp  
 1 5 10 15  
 Ile Gln Thr Gly Phe Ala Gly Pro Ser Glu Arg Gly Asp Ala Glu Ser  
 20 25 30  
 Thr His Leu  
 35

<210> 29  
 <211> 30  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> peptidic compound

<400> 29  
 Glu Ala Thr Gly Pro Asp Leu Glu Gly Lys Asp Ile Gln Thr Gly Phe  
 1 5 10 15  
 Ala Gly Arg Gly Asp Pro Ser Glu Ala Glu Ser Thr His Leu  
 20 25 30

<210> 30  
 <211> 33  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> peptidic compound

<400> 30  
 Asn Asp Ile Ser Pro Phe Ser Gly Asp Gly Gln Pro Phe Lys Asp Arg  
 1 5 10 15

Gly Asp Ile Pro Gly Lys Gly Glu Ala Thr Gly Pro Asp Leu Glu Gly  
 20 25 30  
 Lys

<210> 31  
 <211> 33  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> peptidic compound

<400> 31  
 Gly Lys Gly Glu Ala Thr Gly Pro Asp Leu Glu Gly Lys Asp Ile Arg  
 1 5 10 15  
 Gly Asp Gln Thr Gly Phe Ala Gly Pro Ser Glu Ala Glu Ser Thr His  
 20 25 30  
 Leu

<210> 32  
 <211> 40  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> peptidic compound

<400> 32  
 Phe Ser Gly Asp Gly Gln Pro Phe Lys Asp Ile Pro Gly Lys Gly Glu  
 1 5 10 15  
 Ala Thr Gly Arg Gly Asp Pro Asp Leu Glu Gly Lys Asp Ile Gln Thr  
 20 25 30  
 Gly Phe Ala Gly Pro Ser Glu Ala  
 35 40

<210> 33  
 <211> 31  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> peptidic compound

<400> 33  
 Asp Gly Gln Pro Phe Lys Asp Ile Pro Gly Lys Gly Glu Ala Thr Gly  
 1 5 10 15  
 Arg Gly Asp Pro Asp Leu Glu Gly Lys Asp Ile Gln Thr Gly Phe  
 20 25 30

<210> 34  
<211> 25  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> peptidic compound

<400> 34  
Pro Phe Lys Asp Ile Pro Gly Lys Gly Glu Ala Thr Gly Arg Gly Asp  
1 5 10 15  
Pro Asp Leu Glu Gly Lys Asp Ile Gln  
20 25

<210> 35  
<211> 28  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> peptidic compound

<400> 35  
Asp Ile Pro Gly Lys Gly Glu Ala Thr Gly Arg Gly Asp Pro Asp Leu  
1 5 10 15  
Glu Gly Lys Asp Ile Gln Thr Gly Phe Ala Gly Pro  
20 25

<210> 36  
<211> 31  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> peptidic compound

<400> 36  
Asp Gly Gln Pro Phe Lys Asp Ile Pro Gly Lys Gly Glu Ala Thr Gly  
1 5 10 15  
Arg Gly Asp Pro Asp Leu Glu Gly Lys Asp Ile Gln Thr Gly Phe  
20 25 30

<210> 37  
<211> 28  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> peptidic compound

<400> 37  
Gly Lys Gly Glu Ala Thr Gly Arg Gly Asp Pro Asp Leu Glu Gly Lys



Ser Gly Asp Gly  
1

<210> 42  
<211> 12  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> calcium binding motif

<400> 42  
Asp Asn Asp Ile Ser Pro Phe Ser Gly Asp Gly Gln  
1 5 10

<210> 43  
<211> 12  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> calcium-binding motif

<221> VARIANT  
<222> 2, 4, 6, 8, 10, 11  
<223> Xaa = Any Amino Acid

<400> 43  
Asp Xaa Asp Xaa Ser Xaa Phe Xaa Gly Xaa Xaa Gln  
1 5 10

<210> 44  
<211> 15  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> D-00001 peptide

<221> AMIDATION  
<222> 15

<400> 44  
Ile Pro Ser Asp Phe Glu Gly Ser Gly Tyr Thr Asp Leu Gln Glu  
1 5 10 15

<210> 45  
<211> 15  
<212> PRT  
<213> Artificial Sequence

<220> .  
<223> D-00002 peptide

<221> AMIDATION  
<222> 15

<400> 45  
Asp Phe Glu Gly Ser Gly Tyr Thr Asp Leu Gln Glu Arg Gly Asp  
1 5 10 15

<210> 46  
<211> 15  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> D-00003 peptide

<221> AMIDATION  
<222> 15

<400> 46  
Tyr Thr Asp Leu Gln Glu Arg Gly Asp Asn Asp Ile Ser Pro Phe  
1 5 10 15

<210> 47  
<211> 15  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> D-00004 peptide

<221> AMIDATION  
<222> 15

<400> 47  
Glu Arg Gly Asp Asn Asp Ile Ser Pro Phe Ser Gly Asp Gly Gln  
1 5 10 15

<210> 48  
<211> 15  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> D-00005 peptide

<221> AMIDATION  
<222> 15

<400> 48

Asn Asp Ile Ser Pro Phe Ser Gly Asp Gly Gln Pro Phe Lys Asp  
 1 5 10 15

<210> 49  
 <211> 23  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> D-00006 peptide

<221> AMIDATION  
 <222> 15

<400> 49  
 Thr Asp Leu Gln Glu Arg Gly Asp Asn Asp Ile Ser Pro Phe Ser Gly  
 1 5 10 15  
 Asp Gly Gln Pro Phe Lys Asp  
 20

<210> 50  
 <211> 4  
 <212> PRT  
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<220>  
 <223> glycosaminoglycan binding motif

<221> VARIANT  
 <222> 3  
 <223> Xaa = Any Amino Acid

<400> 50  
 Ser Gly Xaa Gly  
 1